

WHITEPAPER

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On-Premise vs. Cloud: Selection Approach & Implementation Strategies

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1 INTRODUCTION

Business leaders have always looked for ways to enhance their competitive position by focusing on core competencies and outsourcing non-core functions. Cloud computing presents an opportunity for organizations to achieve high performance, scalability, and agility at relatively low costs. These advantages are prompting more businesses to adopt a “Cloud First” strategy.

Adopting a cloud strategy may impact more than technology architecture, influencing business and organizational strategies at all levels. Organizations new to a cloud approach look for tools, processes, and best practices to guide them with decisions, migration, and implementation.

As IT executives prepare blueprints for cloud adoption, they grapple with many questions. This white paper explores the process of developing the right approach to selecting a cloud solution, as well as practical steps for evaluating, describing, and quantifying the benefits, cost savings, and risks associated with deploying or migrating existing solutions on the cloud.

2 WHAT IS CLOUD COMPUTING?

Gartner defines Cloud Computing as “A style of computing where massively scalable IT-Related capabilities are provided as-a-service across the internet to multiple external customers”.

Cloud computing or, simply, “the Cloud”, uses shared resources and services to meet all organizational information technology needs. Cloud has multiple service and deployment models that meet a variety of business needs.

3 DEPLOYMENT MODELS

Public Cloud: Resources are owned and managed by a service provider. It can achieve great economies of scale and reduce costs across an enterprise. In a Public Cloud, the customer has little-to-no control of the baseline technology, and there tends to be low visibility into the underlying technology components. There are several variations of this model, such as Community Cloud, Multi-Company Cloud, etc.

Private Cloud: Private Cloud uses a proprietary architecture, and unlike public clouds, which deliver services to multiple organizations, a private cloud is dedicated to a single organization. This is often called an internal or corporate cloud. The IT resources are owned and managed by either the cloud vendor or by the organization itself. Typically, the resources are on premise, but also may be provided by the external cloud vendor. The economy of scale tends to be low, save for very large organizations. This model has lower cost savings than a Public Cloud, but has a high degree of control and transparency. The primary benefit of a Private Cloud is the pooling of internal resources, and the standardization of technologies and processes across the organization.

Hybrid Cloud: This is a combination of a Public and Private Cloud. The Hybrid Cloud is the most popular model, as it provides just the right combination of cost, control, and transparency. The key challenge is interoperability between the Public and Private Clouds, and the integration between various systems. Some benefits are lost due to multiple technologies being involved and a lack of standardization of processes.

4 SERVICE DELIVERY MODELS

Infrastructure as a Service (IaaS): In this model, cloud service providers deliver an entire virtual data center of resources (e.g., network, computing resources, and storage resources). Organizations deploy their operating systems and applications on the cloud-based infrastructure. In the IaaS model, the user organization patches and maintains the operating systems and application software. IaaS providers typically bill IaaS services on a utility computing basis, and costs reflect the amount of resources allocated and/or consumed.

Platform as a Service (PaaS): In the PaaS model, cloud providers deliver a computing platform, which typically includes the operating system, programming language execution environment, database, web server, and other middleware components. Organizations can use the platform to develop or deploy applications to suit their business needs. The upfront cost and complexity of managing the underlying hardware and software layers is minimized. Typically, PaaS providers charge a subscription fee based on various usage metrics.

Software as a Service (SaaS): In this service model, users are provided access to software applications. SaaS providers manage all necessary infrastructure and platforms required to run the application. SaaS providers install and operate application software in the cloud, and users access the software as clients. This eliminates the need to install and run the application on the cloud user's own computers, which simplifies maintenance and support. Users are limited to functionality, business processes and upgrade schedules as determined by the SaaS provider. The pricing model for SaaS applications is typically a monthly or yearly flat fee per user, so price is scalable and adjustable if users are added or removed at any point.

5 UNDERSTANDING THE REWARDS

The primary value proposition for cloud computing is the meaningful reduction in total cost of ownership, the increase in IT agility, the reduced upfront cost, reduced risk, and the ability to scale on demand. Following are some key benefits and opportunities provided by cloud computing.

Cost Savings – The number one benefit attracting CIOs to the cloud is cost savings. Typically, customers pay only one subscription fee. In a traditional deployment, organizations would require a hefty upfront investment, yet may not have realized any benefits for a year or more. Cloud resources are shared across multiple customers, so it can achieve economies of scale. Resources - hardware and storage, as well as physical space and human resources - can be more fully utilized. This results in reduced IT costs, which are passed on to customers.

Speed of Deployment – Cloud service providers can meet marginal computing needs rather quickly. This allows software implementation timelines to be significantly reduced. Most vendors have predefined processes and highly skilled resources for deploying their solutions, which can save up to 50% in deployment time.

Scalability of Technology Resources – The cloud model is designed and architected for scale. It is relatively easy for cloud service providers to scale from one server to hundreds of servers. Customers don't have to worry about large upfront capital expenditures. At the same time, customers can increase resources for peak demand, then scale down quickly, if necessary. IT operations are far more agile than the traditional on-premises operating model.

Reduced Focus on IT Management – Organizations want to focus on core competency rather than spending time owning and operating IT functions that are costly and time-consuming. This distracts organizations from their core mission and goals. Cloud computing allows an organization to focus more time on its core vision and helps eliminate non-strategic IT activities. Most cloud service is based on a pre-built, standardized foundation of technology and embedded best practices that are efficient, effective, and require less managerial attention.

Reduced Risk – Cloud reduces upfront investments significantly. In most cases, investments are transferred from capital expenditure (CAPEX) to operational expenditure (OPEX). Based on the success of a particular initiative, further investments can be made. If an initiative doesn't meet the goal, the organization can back out

and move to another technology or service provider with relatively little impact. In the current on-premises model, once licenses are procured, there are very few options to return those licenses and back out of an initiative. In the cloud model, this risk to the customer is significantly reduced. At the same time, pressure is applied to vendors to provide better features, performance, and customer service.

6 CLOUD RISKS

Cloud computing reduces risk in many areas, but it does not come risk-free. The following section outlines some risks associated with the cloud.

Compliance – Organizations face different sets of mandatory and ethical regulations, depending on jurisdiction. This problem is compounded by the diversity of regulations and that, sometimes, these contradict one another. Navigating these regulations is a daunting task for any organization. In the cloud environment, organizations have little control over underlying processes. Ensuring compliance for the systems that are not controlled by the organization is difficult and a key risk.

Security and Privacy – In recent years, several high-profile security breaches have resulted in the loss of sensitive information. Cloud service providers are not immune to these security breaches. In fact, they are a prominent target and are more vulnerable, despite better security, compared to smaller, on-premises customers. In a multi-tenant environment, where several customers share the same infrastructure, overall security and privacy risk is added.

Reliability and Performance – In cloud environments, customers have little control over performance and system availability. Cloud vendors notify constituents of all scheduled downtime well in advance, but the possibility of unscheduled downtime still exists. Although SLAs are designed in such a way that individual reliability and performance are guaranteed, this risk cannot be entirely eliminated.

Operational Cost Concerns – Most cloud services are advertised as “one low subscription fee”; however, it is also important to consider incremental costs. Organizations are advised to evaluate peak and off-peak costs, as well as possible cost escalation over time, in order to budget for IT operations more accurately.

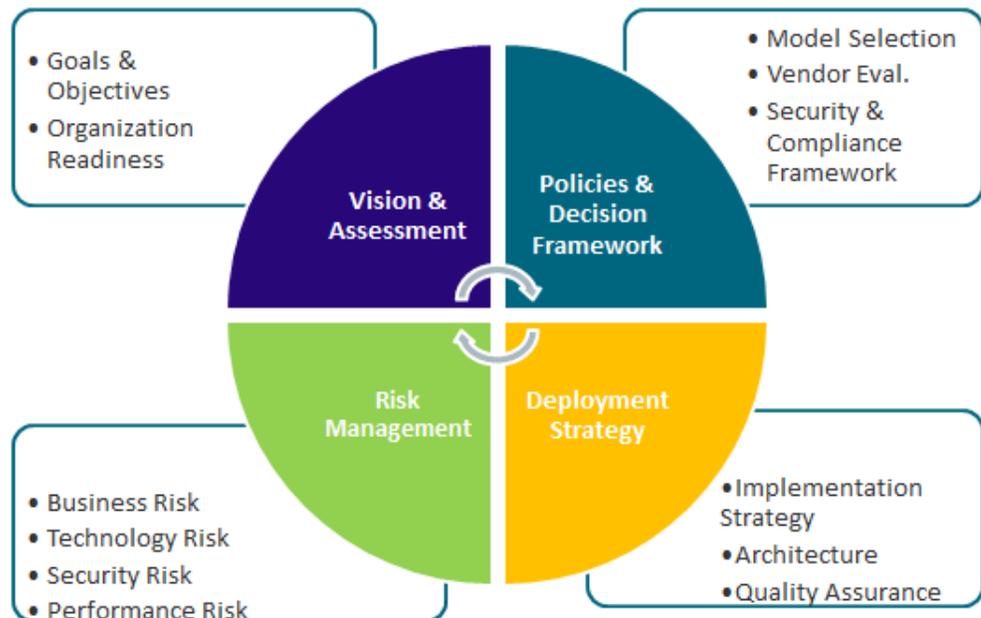
Vendor Lock-in and Lack of Interoperability – The current generation of cloud providers focuses on one small area of the market. These clouds may be best-of-breed solutions for a narrow part of the market, but they cannot meet all business needs. Often, cloud solutions are not compatible with one another. In fact, in some cases, one cloud solution from a vendor is not compatible with another cloud solution from the very same vendor! This lack of interoperability or integration negates some of the benefits provided by the cloud. On top of that, once users get used to working with certain applications, it can become difficult to switch from one application to another. As time passes, the switching cost for an organization increases to such an extent that it cannot

exercise an exit option. Increased reliance on the existing cloud vendor ultimately increases that vendor's pricing power. This is a significant risk that organizations may encounter in the coming years.

Service Provider Long-Term Viability – Compared to traditional vendors, most of the pure cloud vendors are relatively young. Many of them are not yet profitable, and their long-term survival is not guaranteed. At the same time, these service providers are experiencing consolidations, in which some are being acquired by traditional software companies and some are merging with other cloud providers. As a result, customers may face disruption of operations, encounter pricing changes, and face a different set of SLAs.

7 DEVELOPING AN ENTERPRISE-WIDE CLOUD STRATEGY

Before embarking on a cloud journey, organizations should develop a sound strategy to address the financial, operational, and risk management aspects of the business. Understanding the complete business picture is the key to developing a solid cloud strategy. This includes not only new and innovative technology elements, but also the current IT environment, resources, and service level demands projected for the future. Enterprises that draw on this insight will be better able to understand and bring these disparate elements into a single cohesive picture, knowing, with confidence, that the cloud will provide a competitive advantage.



Vision and Assessment – As with any strategy, the first step in developing a cloud strategy is to define the vision and strategic goals. There is a need for a clear assessment of existing IT and organizational capabilities. A careful analysis of existing resources, their utilization, and future challenges in moving to the cloud helps to develop pragmatic short-term and long-term goals.

Developing Policies and a Decision Framework – Migration to the cloud demands significant decision-making. In developing policies, organizations should ask following questions:

- What applications should we choose for the cloud?
- Which cloud model should we select?

- How do we finance cloud projects?
- How do we evaluate cloud vendors?
- What are the various components of an SLA?
- How do we enforce SLAs?
- Do we have the right legally enforceable contracts?
- How do we evaluate success?
- What is our exit strategy?

These decisions require the development of new policies. Part of developing a clear cloud strategy is appropriately addressing such questions and building a framework that assists with guiding executive decisions.

Deployment and Operations – The cloud offers several deployment and service model options. Organizations need to choose the appropriate deployment and service model after careful analysis of each. In defining a cloud strategy, it is critical to understand the differences in operations, management, scale, security, and governance for each of these options. The following section outlines some questions that should be addressed by the deployment and operations strategy.

- How will existing stakeholders be impacted, and how can we manage change?
- What process will be used for development and testing?
- What applications are suitable for the cloud?
- How do we ensure high availability and high performance?
- How does this address failure, and what is our disaster recovery plan?
- Will cloud-based resources fail over internally, or to another cloud provider?

Cloud Risk Management – The cloud offers many benefits, but may change or increase risk. A key concern is data security. It is important to fully understand the regulatory environment and ensure that the selected model will meet those mandatory regulations for privacy. In defining a cloud strategy, it is important to identify all such risks and provide a mitigation plan.

8 IMPLEMENTATION APPROACH

Cloud implementations have much shorter timelines than traditional, on-premises implementations, however cloud implementations also bring new challenges due to the unique nature of the services and deployment models. A standard implementation approach may not be appropriate. Organizations need to develop a structured approach that is tailored to cloud projects. Some key steps for implementing a cloud solution are as follows.

Create a Roadmap: The roadmap is a framework within which any single project can guide the organization in meeting its stated goals. It provides the strategic direction for cloud adoption within an organization, and provides guidance for adoption efforts, allowing the implementation of multiple projects, each progressing independently, yet pursuing common organizational goals.

Identify Projects: All projects are not suitable for the cloud – at least not yet. Project selection depends on organizational maturity in implementing and managing cloud solutions. Some key things to consider when selecting cloud projects are:

- How strategic is the system or application?
- Does the current solution require minimal maintenance, or are the operational costs very high?
- Would the project be high-risk and offer uncertain benefits?
- Is the technology area one in which it is difficult to attract and retain talent?
- Has the system or application fluctuated and had unpredictable resource requirements?

Evaluate Cloud Services: Not all clouds are created equally. The business requirements should guide the process for selecting the right cloud service providers. Selecting a cloud provider is becoming increasingly complex. As cloud environments mature, many providers attempt to differentiate themselves by focusing on specific aspects of their offerings, such as technology stacks or SLAs. The following list provides some key criteria for selecting an appropriate cloud service provider.

- Service-specific Criteria:
 - Performance
 - Availability and reliability
 - User experience

- Integration with other applications on other clouds
- Business Evaluation Criteria:
 - Fixed and variable cost
 - Service level agreements
 - Support and communication
- Technical Evaluation Criteria:
 - Platform maturity
 - Technology alignment
 - Security and compliance
 - Storage and network
 - Lock-in and portability

Choosing the best cloud provider for an application is a multi-dimensional task, and organizations should adopt a holistic approach to evaluate potential providers.

Develop a Service Level Agreement: The Service Level Agreement clearly defines what a cloud service provider is offering and what consequences they will face if they fail to deliver the services as agreed. In order to avoid problems later, and to ensure that promised services are delivered, the Service Level Agreement should be part of the contract and should be finalized and signed before any work is started.

Agree on Pricing and Billing: In the traditional, on-premise model, the enterprise pays a single upfront cost for hardware, software applications, and any licenses that are required. Most cloud vendors advertise their service pricing as “a simple, low subscription fee”. In practice, it is anything but “simple”, and the jury is still out on whether or not the TCO will be lower in the long run. Organizations should look beyond subscription fees and consider the marginal costs of adding users and resources, as well as cost escalation in future years, in order to better predict TCO.

Identify Support Requirements: IT and business support requirements depend on the selected cloud model. Organizations should consider IT and business support requirements, including skill sets and the number of hours required to support the applications, and factor these into the initial and ongoing project costs.

Conduct Training: Training in the cloud is just as important as with on-premises solutions, if not more so. Depending on the selected cloud model, the extent and focus of training varies. Typically, the implementation timeline is much shorter. This may not provide

enough time to allow super users to understand all the nuances of the software. Because of this, training should emphasize how to accomplish tasks, in addition to why those tasks are needed, and how users can configure the application to adapt to ever-changing business needs.

Define an Exit Strategy: The cloud industry is in a developmental stage, with rapidly-changing technology and service landscapes. There are numerous technologies involved in a multi-tenant environment, which is yet to be proven on a large scale. Apart from that, many cloud service providers are new organizations and their long-term viability is uncertain; this is often overlooked. No implementation should begin without a clearly-defined exit strategy.

9 SUMMARY

The label Cloud Computing carries different connotations to different people, involving concepts ranging from a simple definition, such as “pay-as-you-go service”, to commoditization of information technology, a way of processing and managing information. Irrespective of these interpretations and varying definitions, Cloud Computing is widely regarded as a disruptive and potentially transformational direction for information technology. Organizations must be prepared to adopt and take advantage of opportunities provided by the cloud.

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